

Much of the flying in the Serengeti is done at below 1,000 ft., and it is at these lower levels that the following species are commonly encountered. Yellow-throated Sandgrouse (*Eremialector gutturalis*) at times feed on the Central Plains area of the Park in large flocks and seem to have an extremely slow take off and evasive action.

Crowned Lapwing (*Stephanibyx coronatus*) are often met with up to 500 ft., and it is sometimes disconcerting to see the Flappet Lark (*Mirafra rufocinnamomea*) suddenly appear in front of the aircraft, poised in the air at the top of his mating flight, to drop like a stone as one passes.

In December and January great flocks of Red-billed Quelea (*Quelea quelea*) can be seen feeding in the stands of wild sorghum grass on the Central Plains in the South Western area of the Serengeti. In the early morning, one sees a great wave of birds flying in a long line about 60 ft. above the ground, numbering sometimes hundreds of thousands, resembling smoke or light cloud in the sky.

Up to 1,000 ft. great flocks of the large Mottled Swifts (*Apus equatorialis*) are often seen. Due to the speed of these birds no evasive action is possible and one merely sits tensely at the controls watching swifts disappearing under the engine cowling and wings at tremendous speed seeming practically to turn themselves inside out in their efforts to avoid the aircraft, and such is their remarkable aerobatic ability that they rarely collide with it. At lower levels near cliff faces and inselbergs, large flocks of Little Swifts (*Apus affinis*) are often encountered up to 100 ft. above the ground.

Finally it is not unusual to meet the Secretary Bird (*Sagittarius serpentarius*) gliding in wide circles up to 500 ft. altitude, probably on mating display flight. Recently a D.C.3 collided with one of these birds at Seronera aerodrome, resulting in a shattered windshield and badly buckled cabin roof. The reaction of Ostrich (*Struthio camelus*) to low flying aircraft is interesting. Invariably they puff out their wings and display, meanwhile turning in every direction, as if trying to locate the noise.

Breeding records of the larger birds of prey are easily noted from low flying light aircraft. The vultures and eagles usually nest in the top of the *Acacia tortorlis* and yellow fever trees which abound in most areas of the Serengeti, and these nests, impossible to reach from the ground, are easily spotted from the air by the white droppings which cover the branches near the nest. A first record for the Park of the breeding of the Saddle-billed Stork (*Ephippiorhynchus senegalensis*) was discovered in this way.

In conclusion I would like to record my thanks to Mr. R. M. Watson, pilot of the Serengeti Research Project, in whose company many of these observations were made.

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Alcedo quadibrachys and *A. semitorquata* in the North-Western Province of Northern Rhodesia

by C. W. BENSON

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My assistant Jali Makawa accompanied G. Bell-Cross on a tour of the North-Western Province in October, 1963, collecting on behalf of the Rhodes-Livingstone Museum, and I am most grateful to Bell-Cross for the

interest he took in these activities. Of particular interest are two male specimens of *Alcedo quadribrachys guentheri* Sharpe, obtained in dense evergreen forest bordering the Mwombezi River at 12° 15' S., 25° 34' E., during 27th/29th October. This species has only previously been reported from Northern Rhodesia from western Balovale District (Benson, 1960). It is even more noteworthy that on 27th October, at exactly the same site on the Mwombezi, a female of *A. s. semitorquata* Swainson was obtained. A male of this latter species had already been collected on the East Lumwana River at 12° 16' S., 25° 40' E. (Only some six miles from the Mwombezi locality), and another on the Ingoma Stream at 11° 45' S., 24° 55' E., both on 27th March, 1963. The Lumwana specimen is, incidentally, unusually pale below.

Measurements in mm. of specimens from the North-Western Province are:—

	Locality	<i>Alcedo quadribrachys</i>	Wing	Culmen from base
♂	Balovale District		79	53
♂	Mwombezi		75	48
♂	”		76	48
♀	Balovale District		77	47
		<i>Alcedo semitorquata</i>		
♂	East Lumwana		80	51
♂	Ingoma		83	49
♀	Mwombezi		79	51
♀	Ngalula, 13° 24' S., 24° 51' E.		80	49

Four specimens of *semitorquata* from the upper Katanga (localities in Schouteden, 1951), whose wing and culmen lengths I took when working in the Congo Museum, Tervuren in 1955, measure respectively as follows:

♂, 83, 48; ♂, 84, 50; ♀, 83, 47; ♀, 86, 55 mm.

Thus in or near the area of overlap (there is reason to suppose that it is explicable on a basis of off-season movements, *semitorquata* at least being in my experience sedentary), *semitorquata* has a longer wing-length than *quadribrachys* (79–86 as against 75–79 mm.), but there is no appreciable difference in bill-length (47–55 as against 47–53 mm.). Verheyen (1953) gives the wing of three specimens of *quadribrachys* from the Upemba National Park as 75, 77, 79 mm. His figures for the culmen are evidently for the exposed part only, and are not comparable.

Measurements in mm. of material of *semitorquata* from Northern Rhodesia (excepting the North-Western Province) and Southern Rhodesia in the National Museum, Bulawayo, lent by M. P. Stuart Irwin, are:—

	Wing	Culmen from base
9♂♂	79–82 (80.2)	45–52 (49.0)
4♀♀	80–83 (81.5)	45–51 (48.2)
2♂♂	83, 84	46, 48

A male from Chilanga, Northern Rhodesia, 19th November, has wing 74, culmen 36 mm. only, and is evidently not fully grown. It has dusky barring extending across the chest. A female from Gorongoza, Portuguese

East Africa, has wing 78, culmen 48 mm. Specimens from this territory and from eastern Tanganyika have relatively small wing-measurements, see the figures in Clancey (1951) and Benson (1952), and have been called *A. s. tephria* by the former author. There appears to be no marked variation in wing-length in *quadribrachys*, comparing the figures given above with those in Bannerman (1933), the overall figures even for the western, nominate sub-species being 71–81 mm.

Benson (1960) suggests that *quadribrachys* and *semitorquata* could not co-exist, their ecological requirements being so similar, but this seems to be no longer acceptable. Except that *semitorquata* extends into south-western Angola (Traylor, 1963), their case is analogous with examples of lower level gaps (as opposed to montane gaps) in distribution between western and eastern African representative forms given by Benson & Irwin (in press). In the case of western *quadribrachys* and eastern *semitorquata*, however, there is no gap, at least in north-western Northern Rhodesia, and even some overlap. Evidence of an overlap may also be forthcoming in due course from the Katanga. But they may nevertheless be regarded as forming a superspecies, in which *atthis* should also be included.

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Some further records from the North-Western Province of Northern Rhodesia

by C. W. BENSON and C. S. HOLLIDAY

On the tour referred to in the immediately preceding paper, specimens were also obtained in the same site on the Mwombezhi River, between 23rd and 29th October, of the following:— *Pogoniulus bilineatus mfumbiri* (Ogilvie-Grant), *Trochocercus cyanomelas vivax* Neave, *Cossypha bocagei chapini* Benson, *Bradypterus cinnamomeus nyassae* Shelley, *Prinia l. leucopogon* (Cabanis) and *Schoenicola brevirostris alexinae* (Heuglin). A male in breeding condition of the last named was also obtained at Mt. Makulu, 15° 34' S., 28° 16' E., on 6th April.

At Ngalula, 13° 24' S., 24° 51' E., visited from 7th to 21st October, specimens were obtained of the following:—

Accipiter m. melanoleucus Smith (♀, wing 327 mm.), *Aquila (Hieraetus) dubia* (Smith), *Pachycoecyx audeberti validus* (Reichenow), *Turdus olivaceus stormsi* Hartlaub, *Apalis cinerea alticola* Shelley, *Dicrurus l. ludwigii*, (Smith), *Malaconotus nigrifrons manningi* Shelley, *Nectarinia olivacea*